National Institute of Environmental Health Sciences

A method for computing the fraction of attributable risk related to climate damages

Author(s): Jaeger CC, Krause J, Haas A, Klein R, Hasselmann K
Year: 2008
Journal: Risk Analysis : An Official Publication of The Society for Risk Analysis. 28 (4): 815-823

Abstract:

The recent decision of the U.S. Supreme Court on the regulation of CO2 emissions from new motor vehicles shows the need for a robust methodology to evaluate the fraction of attributable risk from such emissions. The methodology must enable decisionmakers to reach practically relevant conclusions on the basis of expert assessments the decisionmakers see as an expression of research in progress, rather than as knowledge consolidated beyond any reasonable doubt. This article presents such a methodology and demonstrates its use for the Alpine heat wave of 2003. In a Bayesian setting, different expert assessments on temperature trends and volatility can be formalized as probability distributions, with initial weights (priors) attached to them. By Bayesian learning, these weights can be adjusted in the light of data. The fraction of heat wave risk attributable to anthropogenic climate change can then be computed from the posterior distribution. We show that very different priors consistently lead to the result that anthropogenic climate change has contributed more than 90% to the probability of the Alpine summer heat wave in 2003. The present method can be extended to a wide range of applications where conclusions must be drawn from divergent assessments under uncertainty.

Source: http://dx.doi.org/10.1111/j.1539-6924.2008.01070.x

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Switzerland

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Morbidity/Mortality

Resource Type: ☑

format or standard characteristic of resource

Research Article, Research Article

Timescale: ☑

time period studied

Time Scale Unspecified